6 March 1969

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Dear Gobind

There are two points about which I would like to write to you. The first concerns the sequence of alanine tRNA from yeast. Please, please don't tell Bob Holley, but I have a horrible suspicion that there may be a mistake in his sequence. The area about which I am doubtful is the so-called dihydro U loop. In every structure to date there is a certain regularity starting from the 5- end of the molecule. It starts off with the 7 base pairs. Then there is an unpaired U, or U derivative. Next there is a purine. Then follow 4 bases of which at least 3 are usually base-paired. In every other sequence, immediately after this, there comes A followed by a G. In Bob's sequence, however, GU appears before the AG. This is now so exceptional that I think we must consider the possibility that there is a mistake.

At first sight it might appear that the correct sequence should have the GU omitted. I think it is more likely, however, that the two incorrect additional bases are, in fact, GC. In other words, that the sequence starting at base number 10 should read GCGUAG... You will immediately see that this is quite an easy mistake to make. Digestion, either by ribonuclease or by T1, would chop up this sequence into dinucleotides. It would therefore have to be determined by a partial digest. You will note that the sequence GCGCG also occurs in another place, that is starting at position 24. Moreover, one should also allow for the fact that Holley's sample might have been a mixture of two closely related sequences, as was the case of Zachau's serine, and in several other examples. I have not checked back to Bob's original paper; in the ordinary way, I would not bother with this sort of thing unduely, but since you are engaged in.

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making the gene for this transfer RNA I do think it would be a wise precaution if you checked that part of the sequence to your own ~~specification~~ satisfaction.

My second point concerns the matter I raised with you in my letter of the 9th January. Malcolm Gefter is still very keen to obtain some of your repeating UAG polymer. I quite forgot to ask you about this when you were at La Jolla, mainly because we had so many other things to talk about. Do send us a little if you can spare it.

My lecture on transfer RNA at Stanford went rather better than I expected, and the whole visit was very worthwhile. It is nice to visit a campus where there are so many people doing such good work.

F.H.C. Crick